Hargett, Mason V. 1985

Dr. Mason V. Hargett Oral History 1985

Download the PDF: Hargett_Mason_Oral_History_1985 (PDF 76 kB)

Dr. Mason V. Hargett

This is an interview with Dr. Mason V. Hargett at the Rocky Mountain Laboratories, August 2, 1985, about his work preparing yellow fever vaccine during World War II plus his postwar postings for the U.S. Public Health Service. The interviewer is Dr. Victoria A. Harden, NIH Historian.

Harden: Dr. Hargett, would you begin with some information about your background and how you came to join the Public Health Service?

Dr. Hargett: My family is a Kentucky family. My father, a Methodist minister, moved to northwest Iowa in 1902. I was born there in 1904 in a Methodist parsonage and grew up in the church, you might say. Because my father was a Methodist minister, my family moved around quite a bit. I decided in high school I wanted to be a doctor. In pursuing that goal, I finished high school and went to Asbury College in Wilmore, Kentucky, and from there to Northwestern Medical School in Chicago. After graduating, I did an internship in Kansas City General Hospital.
I practiced for about six months in Yale, Oklahoma, but it didn't work out very well. The Depression had just started to hit there. I planned to join up with a doctor in private practice in Bartlesville, Oklahoma, but he backed out because of financial problems. Instead, I got a job with the Louisiana State Health Department and was assigned to East Carroll Parish in the extreme northeast corner of the state. The county is bounded by Arkansas on the north and the Mississippi River on the east. When I arrived, there was an epidemic of spinal meningitis in the county, and they had built a little building to keep the patients isolated. The doctor before me had a wife and children. He was fearful of family danger and left. None of the local doctors was familiar with the technique of spinal punctures. At that time, the treatment for spinal meningitis was to do a spinal tap, remove some of the spinal fluid, and inject immune serum. Well, I was right out of the General Hospital in Kansas City, so I was competent at that and taught the other doctors the technique.

After I was there some six or eight months, I met Dr. Charles V. Akin of the U.S. Public Health Service, who was on duty with the state of Louisiana, helping direct a joint program of health and welfare along the Mississippi River where they had had devastating floods some years before. He suggested that I should come into the Public Health Service, so I took the examination and passed. I was then assigned to the New Orleans Marine Hospital. I was there just a short time, after which I was transferred to Washington, D.C., to the Division of Industrial Hygiene. We studied the effect of dust of various kinds. I went to Barry, Vermont, at one point to study the effect of talc and granite dust. Later, I was stationed for short periods at the Outpatient Department in Washington, D.C. and the Outpatient Department in New York City. I was single all this time, so it was easy to move. From there the Service sent me to the Coast Guard Academy in New London, Connecticut. I spent some time with the Coast Guard—lived on board ship for over a year. During this period, I was the physician aboard a Coast Guard cutter on patrol around Cuba. I also made a trip across the Atlantic with a cadet cruise, visiting several ports in Europe. Then I was on the International Ice Patrol in 1934, the year I was married. Married on Saturday and left on ice patrol on Monday! I also had a short period at the Norfolk Marine Hospital. From there, Dr. C. C. Pierce, in charge of personnel and a good friend of mine, decided he was going to take me with him to Europe. So I went to Europe and did immigration work in Warsaw, Poland; Stuttgart, Germany; and London, England. While in London in 1936, Dr. L.R. "Jimmy" Thompson, Director of the National Institute of Health, came over for a visit to get ideas about the development of the new National Institute of Health. When he stopped by to see me in London, I told him I'd like to study tropical medicine. He said he'd see what Surgeon General Tom Parran [Thomas Parran, Jr.] had to say about it. Dr. Parran approved and Dr. Thompson hired a doctor to do my work while I went to school at the London School of Tropical Medicine and got a degree in Tropical Medicine and Hygiene.

Harden: How long were you there?

Hargett: I was in London from October 1936 to July 1937. I got home just a day or two before my only child was born. I had sent my wife back ahead of time to her parents in Oak Park, Illinois. Then they sent me to Miami as a quarantine officer for the port because of my training in tropical diseases.

Harden: Would you stop for just a minute and talk a bit more about your studies in tropical medicine, things that you remember were of particular interest?

Hargett: I was particularly interested in parasites like leishmaniosis, Kala Azar, malaria, and the yellow fever virus.

Harden: You had not had any training in this before?

Hargett: No, that was my first initiation into the tropical diseases except for some cursory exposure in medical school. At that time—this was in 1936—the Public Health Service was concerned about yellow fever being introduced into the United States. The reason for their concern was that we had a heavy population of the mosquito transmitter, *Aedes egypti,* the transmitter of the urban type of yellow fever, and air traffic was increasing from South America. They were afraid that some people would arrive who were ill and in the infective stage when a mosquito could bite them and carry the infection to others. They also feared that infective mosquitoes could be brought in. In Miami, for example, a plane would come in, and before we permit debarkation, we would go through the plane with a hand pump and spray insecticide, hoping to kill any mosquitoes we thought might be harbored in the plane. After serving as chief quarantine officer in Miami for about a year, I was sent to the Rockefeller Foundation in Brazil to study yellow fever. While yellow fever was their primary interest, they were also directing an anti-malaria campaign. I was down there something over thirteen months.

Harden: Where in Brazil were you located?

Hargett: The main laboratory was in Rio de Janeiro, but, of course, we were out in the boondocks, searching out patients with yellow fever and malaria. It was an extremely interesting and productive period. When I came back, I had to cool my heels around Washington for eight or ten months. One evening in 1940, I was having dinner with my family in Bethesda, Maryland, where we were living at the time. The telephone rang during dinner hour. Dr. Rolla E. Dyer, Chief of the Division of Infectious Diseases, was on the phone. He said, "Tom Parran wants you to go out to Hamilton and take a look at things, relative to setting up a yellow fever unit." I'd never been to Montana and didn't know anybody, but I got on the train—we didn't fly in those days—and went out.

Harden: This was in 1940, before we were at war?

Hargett: Yes, 1940. They had just completed the south wing of the Laboratory, and I looked things over. They had all the facilities, the infrastructure necessary to set up a yellow fever operation. So I went back and reported favorably. Another reason I also felt this was a good place was that in case the yellow fever virus should get away, there were no yellow fever transmitting mosquitoes in this area. We moved, arriving here in October, 1940, and lived in a hotel for several months until a house was built for us. The only equipment I had when I began setting up the laboratory was a chair and telephone on the floor, so I had the good fortune of being able to build up the operation right from scratch, the way I wanted to do it, and with the people I selected. Before I ever took anybody on, I had them come into the office for a little talk. I made sure they understood what they were going to do, anything from helping to make vaccine to scrubbing a dirty floor. We had good control. Shortly after I came here, Mr. Harry Burruss, who had spent many years with the Rockefeller Foundation in Africa and South America on yellow fever, came back to the United States. Through my efforts and those particularly of Dr. Dyer, he was employed and assigned to Hamilton to help in the yellow fever operation. He was a great asset, as he knew all the techniques and the technicalities of the operation. Between the two of us, we set up the operation with help from the local people in the laboratory.

Harden: When you established this unit, we were not at war. Was it planned to be a source of vaccine for the Allies?

Hargett: No, at that time, it was just set up to make vaccine for whomever the Public Health Service wanted to provide it.

Harden: Had yellow fever vaccine been recently developed or was the technique widely used?

Hargett: The vaccine was developed by workers of the Rockefeller Foundation. First, they developed what they called the neurotropic vaccine made from the brains of infected mice, but they had trouble, because the vaccine sometimes caused a neurologic reaction in people inoculated. Then they developed a vaccine made using chick embryos. It was called 17D virus vaccine and was safe and effective. We set up a unit here to make vaccine and do a little research. The Rockefeller people were making vaccine in Brazil and New York. They were using human serum as a stabilizing factor in the vaccine. They had had a little trouble with contamination from hepatitis B in the serum. I thought, “Why put any human serum in at all?” The proteins of the chick embryos ought to be sufficient to stabilize it. We did, however, make a batch of vaccine using human serum. We went to the University of Montana and got blood from the students there at $25 a pint. Dr. William Jellison [entomologist at the Rocky Mountain Laboratory] and I each took a shot of the first batch we made, just to be sure it was all right. This first shipment, which was a frozen vaccine, was sent to Dr. Victor Haas in Memphis, Tennessee. It worked well. Then we started making a vaccine without using any human serum. We called it aqueous base vaccine. One of my publications, “Aqueous Base Yellow Fever Vaccine,” gives the details. The shop here at the Laboratory developed special equipment so that we were able to dry the liquid vaccine under a very high vacuum. Between drying it and keeping it stored in dry ice at about -100°F, the vaccine was very stable and dependable. We inoculated people here in the Laboratory and anybody else who wished it. We perfected our techniques, secured equipment, and trained staff. This was quite a job, because it had to be done with extreme care.

Harden: I would like you to elaborate a bit more on this.

Hargett: Because the vaccine is a mild strain of yellow fever virus, which when injected into a person gives a mild case of yellow fever, it stimulates the immune system to protect against virulent yellow fever. In making the vaccine, we had to be extremely cautious to preserve the virus while at the same time not introducing any contamination. It called for extremely aseptic and careful technique. We used operating room type of precautions in producing the vaccine. We arranged with some poultry men to supply us with fertile eggs. When the embryos were three or four days old, they were injected with yellow fever virus and re-incubated. The seventh or eighth day, we would open up the shells, aseptically remove the embryos, grind and centrifuge them. The supernatant was vaccine. From there, it went into ampules. We labelled them—one was a ten-dose ampule; the other was a hundred-dose, although with a virus like we had, one cc would probably take care of a thousand people handled properly. It took some doing to train our people. Mr. Burruss did the training, and things shaped up very well. Now, we come to our number one contribution. In opening up these eggs, the Rockefeller Foundation used boxes of sterile forceps and sterile scissors. They would paint each egg containing an embryo to be harvested for vaccine with an antiseptic. Then they would take sterile scissors, cut the top of the egg off and discard it, take sterile forceps to remove the embryo and put it into a sterile container. For the next egg, they would repeat the whole procedure. I suggested they build a tiny oxyacetylene torch in their shop which would cut off the top of the egg and sterilize it at the same time. It worked like a charm. I believe that this technique is now used throughout the world. We devised a special machine, which rotated the ampule while it was immersed in a solution of alcohol and dry ice, and resulted in the formation of a very fine film of frozen vaccine inside the ampule. From there it was placed in a desiccator under a very high vacuum for drying. During the drying, it was kept in the refrigerator. After the freezing and drying, the ampules were sealed. In this step we faced the problem of the last drop of vaccine sticking in the stem of the ampule. Robert Horning, a technician who has now retired from the Laboratory, found—accidentally or on purpose, I don’t know which—that just by tapping the ampule at the end we could seal it without getting the drop in the neck of the ampule.

Harden: When physicians received this freeze-dried vaccine, what did they have to do before using it?

Hargett: This was, of course, a highly desiccated product. In sending out the vaccine, we also sent out ampules of sterile saline for diluting the vaccine. Physicians would open up the ampule and add the salt solution. As a result, there was very seldom any irritation at the site of injection. The vaccine was diluted one to ten.
We were nicely set up and under no pressure, just making a little vaccine, because there was very little demand. Then in the early spring of 1942, the military had a minor epidemic of hepatitis B among those personnel who had received yellow fever vaccine. This was because some lots of serum, which had been prepared by the Rockefeller Foundation, were contaminated with hepatitis B virus. Recipients were not only receiving yellow fever virus vaccine, but were also getting hepatitis B virus. That stirred things up, and we were asked to expand production.

Harden: The epidemic of hepatitis B was caused by infected serum in the vaccine produced by the Rockefeller Foundation, not by the vaccine from here. Is that correct?

Hargett: Yes. It was caused by serum employed in preparing the vaccine. I was promoting not using the serum. We were making vaccine without serum. As soon as the Hepatitis B epidemic happened, Rockefeller switched to vaccine without the serum. I don’t know why they didn’t do it before, because I talked with Dr. Max Theiler, who was one of their top yellow fever people, about leaving out the serum. He thought it was okay. We were making vaccine without the serum and it was good vaccine. The military asked us to take over and supply their need.
One sidelight here: once we shipped 500,000 doses of vaccine destined for the St. Louis Army Depot. In Wyoming the express car caught fire, and the whole lot was lost. We sent another 500,000. Fortunately, we were able to scrape the bottom of our supply barrel and deliver. Because we did not have enough refrigeration to store adequately, we made arrangements with the creamery in Hamilton, where they had low temperature freezers, and kept our vaccine stored there. We had hundreds of little boxes made by Art Whitcom, the cabinet maker at the Laboratory. Each box had a number on it, and we used them to store the vaccine. In the spring of 1942, the war was on, and we were asked to expand our operation, which we did. They sent Dr. J. W. Hornibrook and Miss Alice Chinn to us as technical people. We hired more people and went into big production. From then on, we supplied the vaccine and filled every order promptly. Every dose of vaccine was good vaccine.’

Harden: So far as you know, there were no problems among the military from the vaccine produced here.

Hargett: No. We got reports time and again. There were a few adverse reports, but after running them down, I could never pinpoint any problems due to bad vaccine. I ran tests on 137 people around Hamilton who had received the vaccine. Later on, we drew blood for a check. Everyone was immune. I am convinced that anybody vaccinated with potent yellow fever vaccine remains immune for life.

Harden: What percentage of the Rocky Mountain Laboratory was devoted to yellow fever vaccine production during the war?

Hargett: I guess at the time we might have had 125 people working in the Laboratory, and maybe 25 of them were in yellow fever. Headquarters were very concerned about production. They gave us everything asked for—money, equipment, personnel—everything. Their position was: "Hargett, you are responsible for making the vaccine. We will back you up. Now you produce." And we did.

Harden: How much space did you occupy?

Hargett: At the start, we were in the South Building, on the top floor. Later on, they built a middle building unit particularly designed for the yellow fever operation. There were special quarters inside and outside for our test monkeys, for refrigeration, for desiccation, and special rooms for aseptic techniques. In other words, the whole top floor was designed and set up purposely for large scale yellow fever vaccine production. And of course, large scale yellow fever vaccine production was really still small scale, because a little vaccine goes so far.

Harden: Wasn't the Laboratory also producing typhus vaccine and Rocky Mountain spotted fever vaccine during the war?

Hargett: There was continued production of spotted fever vaccine during my tenure. As for typhus vaccine, I cannot answer that. Dr. Herald Cox would know.

Harden: Unfortunately, his health is too frail to allow an interview.

Hargett: I am afraid you are right, poor fellow. Brilliant, brilliant man. Had a stroke. The crew that was here when I was here are all gone. There is not a one of them at the Laboratory now. Probably the best informed people left are Bill Jellison [Dr. William Jellison, entomologist], whom you will see or have seen, and Glen Kohls [Dr. Glen Kohls, entomologist].

Harden: Yes, I have talked with Dr. Jellison and will talk with Dr. Kohls.

Hargett: They probably have more background knowledge than anybody else. I know about yellow fever vaccine production, but I did not pay too much attention to the other activities. Bill Jellison was involved in the yellow fever work, too.

Harden: Did you continue to make vaccine after the war ended?

Hargett: After the war ended in 1945, military operations ceased, and the demand for vaccine fell off. We cut back on our operations. There was not too much to do. We undertook some research studies. One of these concerned the viability of the vaccine under various conditions. We used 72,000 mice, because we had a big surplus of them here in the animal department. The results are a matter of published record.

Harden: Was the yellow fever vaccine available during World War I?

Hargett: No. The yellow fever vaccine was developed by the Rockefeller Foundation primarily under the direction of Drs. Sawyer, Bauer, and Theiler. They developed the first vaccine, a neurotropic vaccine from mouse brains, somewhere around 1930. You would have to go through the literature to get the details on that. Then they switched over, as I mentioned, to the 17D vaccine, because it was safer. They were preparing 17D vaccines when I went down there in 1938 to be initiated into their program. [Dr. Max Theiler won a Nobel Prize in 1951 for developing the 17D virus strain that led to the first successful yellow fever vaccine].

Harden: Did anybody compile any statistics on how many people were probably saved during World War II because of the vaccine?

Hargett: No. Our military was concerned about yellow fever in Africa. There is no yellow fever in Asia. Perhaps they were afraid that our enemies would introduce the yellow fever virus into virgin areas and start an epidemic where there was a susceptible population and transmitters but no virus. That did not happen, fortunately. There was no yellow fever among the military except maybe in an odd case where they were not vaccinated. I should mention here that there is only one yellow fever, although there are two methods of transmission. One is the urban type, about which we read and which was rampant in the days of the sailing ships. It is transmitted by *Aedes aegypti,* mosquitoes which are quite domestic in their habits. The other type of yellow fever is called the "jungle type." It is transmitted by mosquitoes of the *Haemagogus* species. They live out in the forest, and monkeys are the reservoir of the virus. People working out in the woods may be bitten by infected mosquitoes and come down with yellow fever.

Harden: After the war, you went to Japan. Do you want to talk about that before discussing the transfer of yellow fever vaccine production to a private firm?

Hargett: We might finish up with yellow fever first. When I left to go to Japan, Mr. Harry Burruss took charge. He was thoroughly competent to do the work. They produced and kept the laboratory intact, but production levels were low. There was very little demand and that continued up until 1957 when they completely closed out the yellow fever production here and turned it over to some firm back in Pennsylvania, I forget the name of the firm now [the Biological Division of the National Drug Company, Swiftwater, Pennsylvania]. It has been taken over by another firm since then. They sent Mr. Burruss to help, gave him a leave of absence or maybe he resigned? He spent a year with this commercial firm back there in Pennsylvania. The Service also sent some equipment and necessary virus to establish commercial production. We were producing yellow fever vaccine for ten cents a dose at the Rocky Mountain Laboratory during the war. I think it went up to $1.50 a dose after the commercial people put it on the market. They have been making it ever since and doing an excellent job.

Harden: Do you still need to take yellow fever vaccine if you are traveling to South America or Africa?

Hargett: As I told you before, once immune, always immune, but the quarantine people made a rule that after six years, you had to be re-vaccinated. I think they have now changed the rule to ten years, but I would have to check current regulations. In other words, they have not accepted life-time immunity, although I think all the evidence points to the fact that once immunized you are always immune.

Harden: Would you talk about your time in Japan now?

Hargett: In 1946, with the Occupation Forces under General McArthur governing Japan, the Army needed a quarantine officer but did not have any qualified quarantine officer available at the time. They asked the Public Health Service, which then sent me on over on a temporary basis. I flew on over in 1946 and represented the military forces in the foreign quarantine operation. Dr.Masayoshi Yamaguchi, a Japanese, was chief Japanese quarantine officer. We worked conjointly. He spoke excellent English and had his postgraduate degree in Public Health from Yale University. We traveled extensively in Japan because there was a tremendous mass movement of people after the war. The Japanese were bringing back millions—and I mean millions—of people from overseas places like Sumatra, Java, China, and Mongolia, where they had been sent during the war. They also were sending back a lot of people from Japan, such as Koreans and folks from the Ryukyu Islands. Our problem was to try to prevent the introduction of disease, particularly cholera and typhus. We supervised operations the Japanese had set up hoping to prevent disease introduction. There was a clandestine movement of people between Korea and Japan, however, that was not under control—smugglers, I guess they were. A little cholera did get in, but the Japanese were able to control it rather quickly. Millions were arriving. They were heavily dusted with DDT to get rid of any body lice that might be carriers of typhus. Because of our activities there, we did not have any serious outbreak—nothing more than localized outbreaks—of cholera or typhus. Dysentery was not a real problem. There were hundreds of ships moving these people around. There were 50,000 importees in port at one time in Sasebo, Japan. They would run special trains to these ports to haul the people home. The fortunate thing about it was that the Japanese—millions, now, we are talking about—were readily and easily reabsorbed into their home towns because of the family system that was present in Japan.

When I got off the plane—I think it was at Atsuki Airport, fifty miles or so out of Tokyo—I went up to the desk for transportation into Tokyo. I happened to be the senior officer on the plane, a lieutenant colonel at the time, but still there was no transportation available. I asked the transportation officer, “What if I wore a star on my uniform?” He replied, “Oh that would be an emergency!” I had to thumb my way into Tokyo. There was a lot of military traffic. A military vehicle picked me up and gave me a ride. After about five months, they found an Army officer who could do the job, and I returned to Hamilton in November 1946. After returning to Hamilton, I wrote the usual letter, which was required in those days, advising of my return. Then I just cooled my heels, with nothing much to do, except to wait and see what happened next. I came back in November, and after Christmas, a telegram came from Washington: “Do you know where Hargett is?” They had lost track of me! Our Director, Dr. [Ralph R.] Parker, replied, “Yes, he returned November such and such, and advised of his return.” The Public Health Service wired back, “Please send us a copy of his statement advising his return.”
At this point, the Service assigned me to a leprosy job for a short time in Louisiana, but I was very unhappy with it. My family was still in Montana. In August or September 1947, I saw my good friend, Dr. R. C. Williams, Assistant Surgeon General, who was in New Orleans to prepare for a conference to be held by the Surgeon General. Ah, it is wonderful to have good friends. He asked me if I would like to go back to Montana, and I replied that I would take any job in Montana. He then said he would send me to Billings, Montana, to the Indian Medical Service. I was Regional Medical Director there for something over two years. I left in January of 1950, because the Department of the Interior changed its policy. Public Health Service Commissioned Officers had always been used as Regional Directors of the Indian Service, but Civil Service doctors were unhappy because they did not have a crack at those top jobs. Thus the Interior Department decided to change its policy. They moved us Commissioned Officers out of the Regional Offices, so I had to find another job. Dr. John Cronin, bless his memory, offered me a job in Atlanta. There I got involved with the hospital construction program. I spent the rest of my days as a Public Health Service officer on hospital construction-—from January 1950, until I retired in January 1964. From 1950 until 1952, I was in Atlanta, and from 1952 until 1964, in San Francisco.

Harden: And you chose to retire here in Hamilton.

Hargett: After retirement, I came back to Hamilton. We never cut loose here in Hamilton. We bought some property here, had good friends here. Came back to visit frequently. Our son decided he wanted to go to college in Bozeman, Montana. So we kept our contacts and moved back here in ‘68. My wife died of cancer in ‘74 and I was single again and free and in good health, no dependents, wide world open to me. I could go and do as I pleased, but Hamilton looked awfully good to me.

Harden: Thank you very much for talking with me.